DEPARTMENT OF ENVIRONMENTAL CONSERVATION

AIR QUALITY CONSTRUCTION PERMIT

Permit No. 110CP01 Final– May 22, 2003

The Department of Environmental Conservation, under the authority of AS 46.14 and 18 AAC 50, issues a construction permit to the permittee, **Golden Valley Electric Association, Inc** for the **North Pole Expansion Project** at the **North Pole Power Plant** in North Pole, Alaska. The permit authorizes two new distillate-fired gas turbines, each with unfired heat recovery steam generators (HRSG), and one common steam turbine generator. In addition, the permit authorizes installation of auxiliary equipment which includes one internal combustion (IC) engine powered emergency generator, and one IC engine powered firewater booster pump as part of the **project** using Combined-Cycle Technology.

This permit satisfies the obligation of the owner and operator to obtain a construction permit as set out in AS 46.14.130(a).

As required by AS 46.14.120(c), the permittee shall comply with the terms and conditions of this construction permit.

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John F. Kuterbach, Manager
Air Permits Program

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List of Abbreviations Used in this Permit

AAC .....Alaska Administrative Code
ADEC.....Alaska Department of Environmental Conservation
AS.....Alaska Statutes
ASTM.....American Society of Testing and Materials
CFR.....Code of Federal Regulations
COMS .....Continuous Opacity Monitoring System
dscf.....Dry standard cubic foot
EPA .....US Environmental Protection Agency
gr./dscf.....grain per dry standard cubic feet (1 pound = 7000 grains)
GPH.....gallons per hour
HAPS.....Hazardous Air Pollutants [hazardous air contaminants as defined in AS 46.14.990(14)]
ID.....Source Identification Number
MACT .....Maximum Achievable Control Technology
Mlb .....thousand pounds
NESHAPs.....Federal National Emission Standards for Hazardous Air Pollutants [as defined in 40 CFR 61]
NSPS.....Federal New Source Performance Standards [as defined in 40 CFR 60]
PPM.....Parts per million
PS .....Performance specification
PSD .....Prevention of Significant Deterioration
RM.....Reference Method
SIC..... Standard Industrial Classification
SO_2.....Sulfur dioxide
TPH .....Tons per hour
TPY .....Tons per year
VOC .....volatile organic compound [as defined in 18 AAC 50.990(103)]
Wt%.....weight percent

Section 1. Identification

Names and Addresses

Permittee:	Golden Valley Electric Association, Inc. P.O. Box 71249 Fairbanks, AK 99707-1249
Facility:	**North Pole Power Plant**
Location:	64° 44′ 04″ N latitude; 147° 20′ 43″W longitude
Physical Address:	H&H Lane North Pole, AK
Owner:	Golden Valley Electric Association, Inc. P.O. Box 71249 Fairbanks, AK 99707-1249
Operator:	Golden Valley Electric Association, Inc. P.O. Box 71249 Fairbanks, AK 99707-1249
Permittee's Responsible Official:	Ms. Kate Lamal, GVEA, Vice President Power Supply
Designated Agent:	Ms. Kate Lamal, GVEA, Vice President Power Supply Golden Valley Electric Association, Inc. P.O. Box 71249 Fairbanks, AK 99707-1249
Facility and Building Contact:	Mr. Alexander Gajdos Golden Valley Electric Association, Inc. H&H Lane, North Pole, AK (907) 488-9264 or (907) 488-9265 or (907) 451-5624
Fee Contact:	Mr. Henrik Wessel Golden Valley Electric Association, Inc. P.O Box 71249, Fairbanks, AK 99707-1249 Phone: (907) 451 – 5627 e-mail: hw@gvea.com
Facility Process Description	Electric Services. Engaged in the generation, transmission, and/or distribution of electric energy for sale.
SIC Code of the Facility:	4911

Section 2. Permit Continuity

Condition 1. Except as revised or rescinded herein or as superseded by an Air Quality Permit issued under AS 46.14.170, the permittee shall comply with terms and Conditions of Air Quality Control Operating Permit No. 110TVP01.

Condition 2. If permit terms and conditions listed in this permit conflict with those of Operating Permit No. 110TVP01, the permittee shall comply with terms and conditions listed herein.

Section 3. Emission Information and Classification

Emissions of Regulated Air Contaminants, as provided in permittee's application:

a. Particulate Matter (PM-10), Sulfur Oxides (SO_X), Nitrogen Oxides (NO_X), Carbon Monoxide (CO), and Volatile Organic Compounds (VOC).

Facility Classifications as described under 18 AAC 50.300(b) through (g), modifications as described under 18 AAC 50.300(h), or owner requested limit classification under 18 AAC 50.305(a)(1) through (4):

a. The North Pole Power Plant Combined-Cycle project requires construction permit provisions requested by the owner or operator under 18 AAC 50.305(a)(3) and (a)(4).

b. North Pole Power Plant is classified as a Prevention of Significant Deterioration (PSD) Major Facility as defined; 18 AAC 50.300(c)(1) because it has the potential to emit more than 250 tons per year of a regulated air contaminant in an area classified as attainment or unclassifiable. The plant will be classified as PSD Major as defined in 18 AAC 50.300(c)(2)(A) because it has the potential to emit more than 100 tons per year of a regulated air contaminant in an area designated attainment or unclassifiable and will become a fossil-fuel-fired steam electric plant of more than 250 MMBtu/hr.

c. This project is classified as a modification requiring a construction permit under 18 AAC 50.300(h)(2) because it has potential to increase actual emissions of an air contaminant for which an ambient air quality standard is established.

d. The permittee has requested limits to avoid the project's classification as a PSD significant modification under 18 AAC 50.300(h)(3) as provided by 18 AAC 50.305(a)(4).

Section 4. Source Inventory and Description

Sources listed in Table 1 have specific monitoring, recordkeeping, or reporting conditions in this permit. Source descriptions and ratings are given for identification purposes only. The total facility equipment inventory can be seen in North Pole Power Plant's Title V Permit No. 110TVP01. The numbering in Table 1 is consistent with the Operating Permit No. 110TVP01.

Table 1. Source Inventory

ID	Source Name	Year Installed	Rating/Size
5*	GT#3, General Electric Gas Turbine Generators, model LM6000PC (with water injection for NO_X control and CO oxidation catalyst)	2005	455 MMBtu/hr (HHV) 43 MW (Nominal)
6*	GT#4, General Electric Gas Turbine Generators, model LM6000PC (with water injection for NO_X control and CO oxidation catalyst)	2006	455 MMBtu/hr (HHV) 43 MW (Nominal)
7	IC Engine, Emergency Generator	2005	150 kW
9	Above Ground Fuel Forwarding Tank, <75 cubic meters, NSPS Subpart Kb	2005	18,000 gallons or 68.2 cubic meters
10	Above Ground Fuel Forwarding Tank, <75 cubic meters, NSPS Subpart Kb	2005	18,000 gallons or 68.2 cubic meters
11	Building Heater	2004	3.3 MMBtu/hr
12	Building Heater	2004	3.3 MMBtu/hr

*Source ID 1, 672 MMBtu/hr (60.5 MW) GE Frame 7, Series 7001, Fuel Oil-fired Model BR regenerative gas turbine, found in Operating Permit 110TVP01, will offset emissions from Source IDs 5 and 6.

Condition 3. This Permit authorizes the new sources installation as listed in Table 1.

Condition 4. For Sources IDs 7, 11, and 12, the permittee shall submit within 30 days after installation, a copy of the vendor specification sheets listing the duty rating, fuel type, fuel consumption, serial number and fuel control settings.

Section 5. Ambient Air Quality

Condition 5. Use only diesel fuel with a total sulfur content of no more than 0.1 % by weight in Source ID 7

5.1 Obtain a statement or receipt from the fuel supplier for each fuel shipment, certifying the fuel sulfur content.

5.2 Report in the Excess Emission and Permit Deviation Report as required by Section 10 of Operating Permit No. 110TVP01 whenever the sulfur content of the fuel exceeds the 0.1 percent

5.3 Record the total sulfur content of the diesel fuel required under Condition 5.1.

Condition 6. Limit the individual hours of operation for Source ID 7 to 52 hours per year calculated on a 12-month rolling average period.

6.1 Monitor and record the cumulative total monthly hours of operation for Source ID 7. Calculate and record the cumulative 12-month rolling total hours of operation for the unit.

6.2 Report in the Operating Report as required by Section 11 of the Operating Permit No. 110TVP01 the cumulative monthly and 12- month rolling total hours of operation for Source ID 7.

Condition 7. Use only gas fuel (propane) for Source IDs 11 and 12 with a total sulfur content of no more than 120 ppm by volume.

7.1 Obtain a statement or receipt from the fuel supplier for each gas fuel shipment, certifying the gas fuel sulfur concentration in ppm by volume. If a certificate is not available from the supplier, then analyze a representative sample of the fuel shipment to determine the sulfur content using 40 CF.R 60, Appendix A Method 11 or an alternative method approved by the department.

7.2 Report in the Excess Emission and Permit Deviation Report condition required by Section 10 of Operating Permit No.110TVP01 whenever the sulfur content exceeds the 120 ppm concentration by volume.

7.3 Record the sulfur content of the gas fuel required under Condition 7.1

Section 6. State Emission Standards

Industrial Processes and Fuel Burning Equipment

Visible Emissions

Condition 8. The permittee shall not cause or allow visible emissions, excluding condensed water vapor, emitted from Source IDs 5, 6, 7, 11, and 12 listed in Table 1 to reduce visibility through the exhaust effluent by any of the following:

a. greater than 20 percent for more than three minutes in any one hour[1],

[18 AAC 50.055(a)(1), 1/18/97, 40 CFR 52.70, 11/18/97]

b. greater than 20 percent averaged over any six consecutive minutes.

[18 AAC 50.055(a)(1), 18 AAC 50.346(c), 05/03/002]
[18 AAC 50.320(a)(2), 1/18/97]

8.2 Monitor, record, and report visible emissions for Source IDs 5, 6, 7, 11 and 12 in accordance with Conditions 49-51 in Operating Permit No. 110TVP01 Conduct an initial visible emission reading after start of operations of Source IDs 5, 6, 7, 8, 11 and 12 within 30 days after initial startup of each unit.

[18 AAC 50.040(a)(2), 7/1/99]
[18 AAC 50.055(a)(1), 1/18/97]
[18 AAC 50.320(a)(2)(A-E), 1/18/97]

Particulate Matter

Condition 9. The permittee shall not cause or allow particulate matter emitted from Source IDs 5, 6, and 7 to exceed 0.05 grains per cubic foot of exhaust gas corrected to standard conditions and averaged over three hours. Monitor, record, and report according to Conditions 52-55 of the Operating Permit No. 110TVP01.

[18 AAC 50.055(b)(1), 1/18/97]
[18 AAC 50.350(d), 6/21/98]
[18 AAC 50.320(a)(2), 1/18/97]

Sulfur Compound Emissions

Condition 10. The permittee shall not cause or allow sulfur compound emissions, expressed as SO_2, to exceed 500 PPM averaged over three hours.

[1] For purposes of this permit, the "more than three minutes in any one hour" criterion in this Condition will no longer be effective when U.S.EPA. incorporates the Air Quality Control (18 AAC 50) regulation package effective 5/3/02 into the Alaska State Implementation Plan.

Ice Fog Standard

Condition 11. The department will, in its discretion, require a person who proposes to build or operate an industrial process, fuel-burning equipment, or incinerator in an area of potential ice fog to obtain a permit and to reduce water emissions. Monitor, record, and report ice fog conditions in accordance with Condition 14.4b(ii)

[18 AAC 50.080, 1/18/97]

Insignificant Emission Sources

Condition 12. Section 7 of Operating Permit No. 110TVP01 contains the requirements the Permittee must identify under 18 AAC 50.335(q)(2) as applicable to insignificant sources at the facility. This section also specifies the testing, monitoring, reporting, and recordkeeping for insignificant sources that the Department finds necessary to ensure compliance with the applicable requirements. Insignificant sources are not exempted from any air quality control requirement or federally enforceable requirement.

Section 7. Federal Emission Standards

Comply with the requirements of 40 CFR 60, New Source Performance Standards (NSPS) as they apply to affected facilities specified below. Notify and report as set out below and as specified in Condition 22.

General Provisions Subject to NSPS Subpart A

Condition 13. 40 CFR 60, Subpart A, General Provisions. For Source IDs 5 and 6. In accordance with 40 CFR 60, Subpart A and 18 AAC 50.040, for each construction, modification, or reconstruction of affected facilities and sources regulated under 40 CFR 60

13.1 Notify the department and EPA:

a. No later than 30 days after construction or reconstruction commencement in accordance with 40 CFR 60.7(a)(1);

b. No more than 15 days after startup in accordance with 40 CFR 60.7(a)(3);

c. 60 days prior or as soon as practicable before modifying facilities that would be subject to NSPS as set out in 40 CFR 60.7(a)(4);

d. No less than 30 days prior to conducting a demonstration of continuous monitoring system performance as set out in 40 CFR 60.7(a)(5);

e. No less than 60 days prior to commencement of reconstruction or replacement of a facility, as defined in 40 CFR 60, notify the department and EPA with information as set out in 40 CFR 60.15(d).

[18 AAC 50.320(a)(2)(A-E), 1/18/97]
[18 AAC 50.040(a)(1), 1/18/97]

13.2 Maintain records of occurrence and duration of startup, shutdown, or malfunction of an affected facility, control equipment, or monitoring equipment as set out in 40 CFR 60.7(b). Submit continuous monitoring system performance reports as set out in 40 CFR 60.7(c) and (d). Maintain a file of measurements as set out in 40 CFR 60.7(e).

[18 AAC 50.320(a)(2)(A-E), 1/18/97]
[18 AAC 50.040(a)(1), 1/18/97]

13.3 Within 60 days after each source achieves maximum production rate, but no later than 180 days after initial start-up and at such other times as may be required by the EPA under Section 114 of the U.S. Clean Air Act, conduct performance tests as follows:

a. Notify the department and EPA at least 30 days in advance of any performance test and opacity observation as set out in 40 CFR 60.8(d) and 60.11(e)(1);

b. Conduct performance tests and data reduction as set out in 40 CFR 60.8(b) and (f);

c. Provide the department copies of EPA administrator approvals for alternative performance testing;

d. Provide sampling ports and safe sampling platform(s), safe access to platform(s), and utilities, and conduct testing as set out under 40 CFR 60.8(c) and (e); and

e. Furnish the department and EPA a written report of the performance test and opacity observation results as set out in 40 CFR 60.8(a) and 60.11(e)(2) through (5).

[18 AAC 50.320(a)(2)(A-E), 1/18/97]
[18 AAC 50.040(a)(1), 1/18/97]

13.4 **Good Air Pollution Control Practice.** At all times, including periods of startup, shutdown, and malfunction, the permittee shall, to the extent practicable, maintain, and operate affected facilities including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the department that may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance records, and inspections of affected facilities.

[18 AAC 50.320(a)(2)(A-E), 1/18/97]
[18 AAC 50.040(a)(1), 1/18/97]

13.5 The permittee is prohibited from concealing a violation of any applicable NSPS standard as set out in 40 CFR 60.12.

[18 AAC 50.320(a)(2)(A-E), 1/18/97]
[18 AAC 50.040(a)(1), 1/18/97]

13.6 Performance tests shall be conducted and data reduced in accordance with test methods and procedures contained in the applicable NSPS subpart; unless the department and EPA approve the use of an equivalent method or approve the use of an alternative method which has been determined adequate for indicating compliance with the NSPS standard:

a. Ensure all systems and devices used to monitor and record the NO_X and oxygen emissions are installed, calibrated, and operational no later than 60 days after startup and as set out in 40 CFR 60.13(b) prior to conducting a performance test under 40 CFR 60.8;

b. Ensure all systems and devices used to monitor and record the NO_X and oxygen emissions meet the minimum frequency of operation requirements set out in 40 CFR 60.13(e), and are kept in continuous operation, except for system breakdowns, repairs, calibration checks, and zero/span adjustments;

c. Ensure all systems and devices used to monitor and record the NO_X and oxygen emissions obtain representative measurement of emissions or process parameters as set out in 40 CFR 60.13(f);

d. Ensure all systems and devices used to monitor and record the NO_X and oxygen emissions are able to reduce all data to 3-hour average nitrogen oxide concentration measurements; and

e. Provide the department a copy of each EPA alternative monitoring approval or relative accuracy test audit (RATA) approval issued under 40 CFR 60.13(i) or (j) within 30 days of receipt.

[18 AAC 50.320(a)(2)(A-E), 1/18/97]
{18 AAC 50.040(a)(1), 1/18/97}

13.7 For the purpose of submitting compliance certifications or establishing whether or not the permittee has violated or is in violation of any standard cited in this part, nothing in this part shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether the NSPS-affected sources would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed.

Stationary Gas Turbines Subject to NSPS Subpart GG

Condition 14. 40 CFR 60, Subpart GG. The requirements of Condition 14 apply only to Turbine Source IDs 5 and 6: 43 MW GE, Model LM 6000 combustion turbine burning gas turbine fuels, 0-GT and 1-GT (naphtha/LSR and Jet A), with a heat input rating of no greater than 455 MMBtu/hr (HHV) input.[2]

14.1 Applicability and designation of affected facilities, 40 CFR 60.330. Affected sources are stationary gas turbines with a heat input at peak load equal to or greater than 10.7 gigajoules per hour (10 MMBtu/hr) based on lower heating value as described in 40 CFR 60.330(a) and (b).

[2] Permit conditions that may have been modified to indicate the permittee's expected operation following EPA approvals for alternative schedules and performance testing but does not relieve the permittee from the actual requirements listed in Subpart GG.

14.2 Standard for nitrogen oxides, 40 CFR 60.332(a)(1). Comply with the NO_X emission limitation as listed in 40 CFR 60.332(a)(1). The limit is STD = 0.0075(14.4)/Y + F; where STD is the allowable NO_X emissions (percent by volume) at 15% O_2, at ISO conditions. Y is the manufacturer's rated heat rate at manufacturer's rated load (kilojoules per watt hour), or actual heat rate based on lower heating value of fuel measured at actual peak load during performance test, and F is the emission allowance for fuel-bound nitrogen, no credit for fuel bound nitrogen is being used. Based on the manufacturer's rated heat rate of 7.42 kJ/Watt-hour, the standard for Source IDs 5 or 6 is 146 ppmv at 15% O_2 and ISO conditions.

a. Manufacturers may develop custom fuel-bound nitrogen allowances for each gas turbine model they manufacture. These fuel-bound nitrogen allowances shall be substantiated with data and must be approved for use by the EPA before the initial performance test required by Condition 13.3b.

b. If using water to control NO_X emission, the turbine unit is exempt from the NO_X limitation in Condition 14.2 when the owner or operator of the unit discontinues water injection because the ice fog is a traffic hazard.

14.3 Standard for sulfur dioxide, 40 CFR 60.333. Comply with the sulfur dioxide exhaust concentration for new source performance listed in 40 CFR 60.333(a) or (b) of 150 ppm by volume at 15 percent oxygen and on a dry basis or 0.8% fuel sulfur content by weight, respectively.

14.4 Monitoring of operations, 40 CFR 60.334.

a. Comply with 40 CFR 60.334(b) to monitor the nitrogen and sulfur content of the distillate fuel. Determine and record distillate fuel nitrogen and sulfur content daily. Owner, operators, or fuel vendors may develop custom schedules to test fuel as specified in 40 CFR 60.334(b)(2) substantiated with data and approved by the EPA before using the custom schedule.

b. Include with excess emission and monitoring system reports submitted under 40 CFR 60.7(c), information as listed in:

(i) 40 CFR 60.334(c)(2)—any daily period for which fuel sulfur content fired in the turbine exceeds 0.8% by weight; and

(ii) 40 CFR 60.334(c)(3)—Report in writing to the department and EPA during calendar quarters for which the owner or operator deems that ice fog is a traffic hazard. Report for each period the ambient conditions existing during that period, the date and time the air pollution control system was deactivated, and the date and time the air pollution control system was reactivated. Postmark the quarterly report by the 30th day following the end of each calendar quarter.

14.5 Test methods and procedures, 40 CFR 60.335.

a. To compute the nitrogen oxide emissions, the owner or operator shall use analytical methods and procedures that are accurate to within 5 percent and are approved by the Administrator to determine the nitrogen content of the fuel being fired.

b. When conducting performance tests for nitrogen oxide emissions as required in 40 CFR 60.335(b) and (c), or alternative test methods in accordance with 40 CFR 60.335(f):

(i) Compute the NO_X emission rate for each run using the equation listed in 60.335(c)(1).

(ii) Use the continuous emission monitoring (CEM) system to measure compliance with the NO_X emission standard at:

30%, 50%, 75%, and 100% of peak load, or

at four points in the normal operating range of each turbine, including the minimum load in the range, and peak load.

(iii) Use Method 20 to determine NO_X and O_2 concentrations. Use a span value of 300-ppm nitrogen oxide and 21 percent oxygen. Determine NO_X emissions at each of the four load conditions tested.

(iv) Use the continuous NO_X and O_2 emission monitoring system required by Condition 14.4 and Condition 19 to ensure compliance with the NO_X standard set out in Condition 14.2. Correct the measured NO_X concentration to 15% O_2 exhaust concentration based on the equations in 40 CFR 60 Appendix A, Method 20. Continuously monitor and record compliance with the turbine NO_X concentration limit set out in Condition 14.2 based upon 3-hour average nitrogen oxide concentration measurement.

c. Determine compliance with the sulfur content standard using methodology as described in 40 CFR 60.335(d); unless the department and EPA approves the use of an equivalent method or approves the use of an alternative method which has been determined adequate for indicating compliance with the standard.

(i) Use the sulfur analysis methods incorporated by reference in ASTM D 2880-71, 78, or 96.

(ii) Dilution of samples before analysis (with verification of the dilution ratio) may be used, subject to the Federal Administrator's approval.

d. The permittee may propose an alternative ambient correction factor to the equation in 40 CFR 60.335(c)(1), in accordance with 40 CFR 60.335(f)(1), to adjust the nitrogen oxide emission level measured by the performance test as provided in 40 CFR 60.8. Substantiate the alternative with data and obtain Federal Administrator approval before using the alternative. Submit a copy of the approved correction factor to the department within 30 days after the EPA approval. Keep a copy of each EPA issued alternative monitoring method with the permit at the facility.

[18 AAC 50.040(a), 1/18/97] {Federal Citation 40 C.F.R. 60.11(d)}

Volatile Organic Liquid Storage Vessels (Tanks) Subject to NSPS Subpart Kb

Condition 15. NSPS Subpart Kb Requirements (Recordkeeping Only). For Source IDs 9 and 10, the permittee shall keep readily accessible records for the life of the tank showing the dimensions and an analysis showing the capacity of the tank.

[18 AAC 50.040(a)(2)(M), 7/2/00]
[40 C.F.R. 60.116b(a) & (b), Subpart Kb, 7/1/99]

Section 8. Owner Requested Limits to Avoid Classification as a PSD Major Modification

Nitrogen Oxides, Carbon Monoxide and Sulfur Dioxides Requirements. The permittee shall avoid classification as a Prevention of Significant Deterioration major modification under 18 AAC 50.300(h)(3)(B)(ii) for NO_X; 18 AAC 50.300(h)(3)(B)(i) for CO; 18 AAC 50.300(h)(3)(B)(iii) for SO_2 as follows:

Condition 16. Limit NO_X Emissions expressed as NO_2.

16.1 Source ID 2 (GT#2), limits found in the Operating Permit No. 110TVP01 issued August 27, 2002, remains at 7,992 hours on a continuous, 12-month rolling period. Additional limits of operation for Source IDs 1, 5 and 6 are as follows:

a. Limit the cumulative annual NO_X emissions to 1600 tons/year (tpy) using a 12-month rolling averaging period for Source IDs 1, 5 and 6, initialized upon startup of Source ID 5.

b. On initial startup of Source ID 5, limit and initialize annual NO_X emissions from Source ID 1 (GT#1). Source ID 1 emissions reductions offset the emissions increases from Source IDs 5 and 6 to maintain compliance with Condition 16.1a.

c. Limit continuous emission of NO_X to comply with Condition 16.1a by installing and operating water injection on Source IDs 5 and 6 except during ice-fog events as provided in Condition 14.2b.

d. Permittee will notify the department as directed in Section 10 of Operating Permit No. 110TVP01 if Source ID 2 (GT#2) will be out of service more than 30 days due to a failure, or a breakdown. In such an event, the permittee will commission Source ID 1 (GT#1) in lieu of Source ID 2 for the outage period. Source ID 1 emissions during the outage period will not be counted toward the Source ID 1's 12-month rolling averaging NO_X limit. Permittee will notify the department when Source ID 2 resumes operation and Source ID 1 returns to operation under the rolling annual NO_X emission cap.

e. Report Source ID 1 hours of operation as Source ID 2 hours of operation when substituting for Source ID 2 hours of operation in the Operating Report. When substituted for Source ID 2 hours of operation Source ID 1 emissions are not counted against the Source ID 1 NO_X limit as set out in Condition 16.1a.

16.2 Continuous NO_X Emissions Monitoring and Recordkeeping

a. Install, calibrate, certify, operate, and maintain in accordance with Condition 13.6 and Condition 20, extractive continuous NO_X and oxygen emission monitoring systems (CEMS) on Source IDs 1, 5, and 6. Source ID 1 is approved to have an alternative calibration drift and relative accuracy tests in accordance with Condition 21. Install a NO_X and oxygen CEMS sampling probe in each turbine exhaust stack on Source IDs 5 and 6. Continuously monitor and record Source IDs 1, 5, and 6 for compliance with Condition 16.1a based upon 3-hour block average nitrogen oxides and oxygen concentration measurements, convert to emission rates as set out in Condition 16.2d.

b. Either continuously monitor and record

(i) The quantity of distillate fuel burned in each of Source IDs 1, 5 and 6.

Or

(ii) Estimate for each day, the operating time, fuel consumption from any of Source IDs 1, 5 and 6 by multiplying the operating time by the design fuel consumption rate of that source.

c. For CEMS, determine or provide vendor data documenting the gross calorific value of each fuel burned.

d. Calculate the daily-average NO_X emission rate, expressed as NO_2, for Source IDs 1, 5 and 6 exhaust stack(s) based on the methodology set out in 40 CFR 60, Appendix A, Method 20, Part 7.5.1 as follows:

$$E = [C_d F_d 20.9]/[20.9-O_{2dry}] \qquad \text{Eqn. 20-6}$$

Where:

E = NO_X Emission Rate in ng/J (lb/MMBtu)
C_d = Concentration of dry NO_X in ng/scm (lb/scf)
F_d = Fuel Factor of applicable fuel based on a dry basis, scm/J (scf/MMBtu) from Appendix A, Method 19
O_2 = Percent Oxygen on a dry basis, %

The pollutant concentration must be in ng/scm (lb/scf) and the fuel factor (F) must be in scm/J (scf/million Btu). If the pollutant concentration (C) is not in the appropriate units, use Method 19, Table 19-1 in Section 17.0 to make the proper conversion. The fuel factor is the ratio of the gas volume of the products of combustion to the heat content of the fuel. The dry fuel factor (F_d) includes all components of combustion less water. Use fuel factors for the fuel as provided for in

40 CFR 60, Appendix A, Method 19, Table 19-2 or calculate the fuel F-factor using the procedures listed in 40 CFR 60 Appendix A, Method 19, Part 12.3.2.1, Eqn. 19-13.

e. Calculate and record the total NO_X emissions, expressed as NO_2, for Source IDs 1, 5, and 6 for each monthly total and 12-month rolling averaging period by summing the total daily-average NO_X emissions from each of the turbines.

16.3 Alternative NO_X Emissions Monitoring and Recordkeeping

a. For each of Source IDs 1, 5, and 6, the permittee may develop and submit for department approval a parametric monitoring program with quality assurance procedures to predict NO_X emissions when CEMS is out-of-service or emission data are out-of-bounds with quality assurance procedures. If electing to submit the program for approval, provide a copy of all assumptions, process, emission, and ambient data analyzed in support of the program and statistical analysis for relationships between parameters and emission rates.

b. For any of Source IDs 1, 5 and 6, when the CEMS is out of service or emission data are out-of-bounds with quality assurance procedures, use the following approaches to estimate NO_X emissions. Monitor the source's operating hours when CEMS is out of service/out-of-bounds. Estimate NO_X emissions using the hours of operation and design emission rate as follows and count the estimated NO_X emissions as part of Condition 16.2 d-e:

(i) For any of Source IDs 1, 5, or 6, the permittee may use a department approved predictive monitoring relationship as set out in Condition 16.3a by monitoring relevant process, ambient parameters and operating hours and calculating emission rates; or

(ii) For Source IDs 5 or 6, assume a NO_X design emission rate of 114 lb/hr for operations when the water to fuel injection ratio equal to or greater than 1.0. If the maximum hourly emission rate for Source ID 5 or 6 during the most recent 30 operating days exceeds 114 lb/hr then use the maximum hourly emission rate during the most recent 30 operating days for which calibration monitoring records were collected; or the permittee may use the fuel consumption and the water to fuel ratio data collected in Condition 14.4 to determine the NO_X concentration in accordance with Condition 14.5;

(iii) For Source IDs 5 and 6 assume an unabated NO_X design emission rate of 685 lb/hr when water to fuel injection ratio is less than 1.0.

(iv) For Source ID 1, assume a NO_X design emission rate of 824 lb/hr. If the maximum emission rate for Source ID 1 during the most recent 30 days exceeds 824 lb/hour then use the maximum hourly emission rate during the most recent 30 operating days for which calibrated monitoring records were collected.

c. For Source ID 1 record the time, date and duration that Source ID 1 operates in lieu of Source ID 2 during an outage as described in Condition16.1d.

16.4 Reporting--Report in the Operating Report as required by Section 10 of the Operating Permit No. 110TVP01.

a. the monthly total NO_X emissions and 12-month rolling average of NO_X emissions from each exhaust stack of Source IDs 1, 5, and 6.

b. the time, date, and duration for which Source ID 1 operated in lieu of Source ID 2 during an outage described in Condition 16.1d.

Condition 17. Limit Sulfur Dioxide Emissions, expressed as SO_2

17.1 Limit the sulfur fuels as follows:

a. Limit the sulfur content in gas turbine fuel 0-GT (naphtha or LSR) burned in Sources IDs 5 and 6 to no more than 0.05 percent by weight.

b. Limit the sulfur content in gas turbine fuel 1-GT (JetA) used for startup in Source IDs 5 and 6 to no more than 0.30 percent by weight; and

c. Limit the volume of gas turbine fuel 1-GT consumed in Source IDs 5 and 6 to no more than 1.5 million gallons per year.

17.2 Follow fuel sulfur measurement and certification procedures contained in Condition 6 of the Operating Permit No. 110TVP01. Monitor and record the fuel consumption of Source IDs 5 and 6 to assure compliance with Condition 17.1c

[18 AAC 50.055(c), 1/18/97]
[18 AAC 50.320(a)(2)(A-E), 1/18/97]

17.3 Keep records of the statements of certification, and all test results and calculations required under Conditions 17.1a-17.1c. Attach copies of the records with the Operating Report required by Section 10 in Operating Permit No. 110TVP01.

Condition 18. Limit Carbon Monoxide Emissions, expressed as CO

18.1 Limits on Source ID 2 (GT#2) limits in Operating Permit No. 110TVP01 remains at 7,992 hours on a continuous, 12- month rolling period. Additional limits of operation for Source IDs 1, 5 and 6 are as follows:

a. Limit the annual CO emissions for Source IDs 1, 5 and 6 to 115 tons/year (tpy) using a 12-month rolling averaging period. Initialized upon startup of Source ID 5.

b. Limit the combined CO emissions in the exhaust of Source IDs 5 and 6 to no greater than 98 tons per 12-month rolling averaging period, initialized upon startup of Source ID 5.

c. Limit continuous CO emissions on Source IDs 5 and 6 by installing an oxidation catalyst on each turbine's exhaust outlet upstream of the exhaust stack network.

d. Permittee will notify the department as directed in Section 11 of the Operating Permit No. 110TVP01 if Source ID 2 (GT#2) will be out of service more than 30 days due to a failure, or a breakdown. In such an event, the permittee will commission Source ID 1 (GT#1) in lieu of Source ID 2 for the outage period. Source ID 1 emissions during the outage period will not be counted toward the Source ID 1's 12-month rolling averaging CO limit. Permittee will notify the department when Source ID 2 resumes operation and Source ID 1 returns to operation under the rolling annual CO emission cap.

e. Report Source ID 1 hours of operation as Source ID 2 hours of operation when substituting for Source ID 2 hours of operation in the Operating Report. When substituted for Source ID 2 hours of operation Source ID 1 emissions are not counted against the Source ID 1 CO limit as set out in Condition 18.1a and 18.1b.

18.2 Continuous CO Emissions Monitoring and Recordkeeping

a. Install, calibrate, certify, operate, and maintain in accordance with Condition 13.6 and Condition 20, an extractive continuous CO CEMS. Source ID 1 is approved to have an alternative calibration drift and relative accuracy tests in accordance with Condition 21. Install a CO CEMS sampling probe in each turbine stack on Source IDs 1, 5, and 6. Continuously monitor and record Source IDs 1, 5, and 6 for compliance with Condition 18 based upon 3-hour block average CO measurements and oxygen measurements from Condition 18.1 (a-b), converted to emission rates as set out in Condition 18.2d**.**

b. Monitor as provided for in Conditions 16.2b and 16.2c

c. Monitor performance of oxidation catalyst to maintain compliance with Condition 18.1 (a-b). Perform necessary maintenance or replacement of catalyst following vendor guidelines to ensure compliance with the CO limits.

d. Calculate the daily-average CO emission rate, for Source IDs 1, 5 and 6 exhaust stack(s) based on the methodology set out in 40 CFR 60, Appendix A, Method 20, Part 7.5.1 as follows:

$$E = [C_d F_d 20.9]/[20.9-O_{2dry}] \qquad \text{Eqn. 20-6}$$

Where:

E = CO Emission Rate in ng/J (lb/MMBtu)
C_d = Concentration of dry CO in ng/scm (lb/scf)
F_d = Fuel Factor of applicable fuel based on a dry basis, scm/J (scf/MMBtu) from Appendix A, Method 19
O_2 = Percent Oxygen on a dry basis, %

The pollutant concentration must be in ng/scm (lb/scf) and the fuel factor (F) must be in scm/J (scf/million Btu). If the pollutant concentration (C) is not in the appropriate units, use Method 19, Table 19-1 in Section 17.0 to make the proper conversion. The fuel factor is the ratio of the gas volume of the products of combustion to the heat content of the fuel. The dry fuel factor (F_d) includes all components of combustion less water. Use fuel factors for the fuel as provided for in 40 CFR 60, Appendix A, Method 19, Table 19-2 or calculate the fuel F-factor using the procedures listed in 40 CFR 60 Appendix A, Method 19, Part 12.3.2.1, Eqn. 19-13.

e. Calculate and record the total CO emissions, for Source IDs 1, 5, and 6 for each monthly total and 12-month rolling averaging period by summing the total daily-average CO emissions from each of the turbines.

18.3 Alternative CO Emissions Monitoring and Recordkeeping

a. For each of Source IDs 1, 5, and 6, the permittee may develop and submit for department approval a parametric monitoring program to predict CO emissions when CEMS are out-of-service or emission data are out-of-bounds with quality assurance procedures. If electing to submit the program for approval, provide a copy of all assumptions, process, emission, and ambient data analyzed in support of the program and statistical analysis for relationships between parameters and emissions.

b. For any of Source IDs 1, 5, and 6, when the CEMS is out of service or emission data are out-of-bounds with quality assurance procedures, use the following approaches to estimate CO emissions. Monitor the source's operating hours when the CEMS is out of service/out-of-bounds. Estimate CO emissions using the hours of operation and design emission rate as follows and count the estimated CO emissions as part of Condition 18.2 c-d:

(i) For any of Source IDs 1, 5, or 6, the permittee may use a department approved predictive monitoring relationship as set out in Condition 18.3a by monitoring relevant process, operating hours, and ambient parameters and calculating emissions; or

(ii) For each Source ID 5 and 6, assume a CO design emission rate of 11 lb/hr. If the maximum hourly emission rate during the most recent 30 operating days exceeds the 11 lb/hr then use the maximum hourly emission rate during the most recent 30 operating days for which calibrated monitoring records were collected; or the permittee may use the fuel consumption and the water to fuel ratio data collected in Condition 14.4 to determine the CO concentration in accordance with Condition 14.5; and

(iii) For Source ID 1, assume a CO design emission rate of 13.3 lb/hour when burning HAGO fuel. Or, if the maximum hourly monitored CO emission rate for Source ID 1 exceeds 13.3 lb/hr during the most recent 30 operating days, for which calibrated monitoring records were collected exceeds the design emission rate, then use that maximum hourly monitored emission rate.

c. For Source ID 1 record the time, date and duration that Source ID 1 operates in lieu of Source ID 2 during an outage described in Condition 16.1d.

18.4 Report in the Operating Report as required by Section 10 of Operating Permit No. 110TVP01, the monthly total CO emissions 12-month rolling average CO emissions from each exhaust stack of Source IDs 1, 5 and 6.

Section 9. General Source Testing and Monitoring Requirements

Condition 19. **Reference Test Methods.** The permittee shall use the following as reference test methods when conducting source testing for compliance with this permit:

19.1 Source testing for compliance with requirements adopted by reference in 18 AAC 50.040(a) must be conducted in accordance with the methods and procedures specified in 40 CFR 60.

[18 AAC 50.220(b) & (c), 1/18/97]
[18 AAC 50.320(a)(2)(A-C), 1/18/97]

19.2 Source testing for the reduction in visibility through the exhaust effluent must be conducted in accordance with the procedures set out in Section 13 of the Operating Permit No. 110TVP01.

[18 AAC 50.220(b) & (c), 1/18/97]
[18 AAC 50.320(a)(2)(A-C), 1/18/97]

19.3 Source testing for emissions of particulate matter, nitrogen compounds, carbon monoxide, and volatile organic compounds must be conducted in accordance with the methods and procedures specified 40 CFR 60, Appendix A.

[18 AAC 50.220(b) & (c), 1/18/97]
[18 AAC 50.320(a)(2)(A-C), 1/18/97]

19.4 Source testing for emissions of PM-10 must be conducted in accordance with the procedures specified in 40 CFR 51, Appendix M.

[18 AAC 50.220(b) & (c), 1/18/97]
[18 AAC 50.320(a)(2)(A-C), 1/18/97]

19.5 Source testing for emissions of any contaminant may be determined using an alternative method approved by the department in accordance with Method 301 in Appendix A to 40 CFR 63.

[18 AAC 50.220(b) & (c), 1/18/97]
[18 AAC 50.320(a)(2)(A-C), 1/18/97]
[18 AAC 50.320(a)(2), 1/18/97]
[18 AAC 50.335(g), 1/18/97]

Condition 20. Install; calibrate; conduct applicable continuous monitoring system performance tests listed in 40 CFR 60, Appendix B, and certify test results; operate; and maintain air contaminant emissions and process monitoring equipment on the sources as described herein and in documents provided by the permittee, listed in Section 12. For Source IDs 1 and 5 submit monitoring equipment siting, operation, and maintenance plans for approval by the department 60 days prior to startup of Source IDs 5. For Source ID 6, submit monitoring equipment siting, operation, and maintenance plans for approval by the department 60 days prior to startup of Source ID 6.

For continuous emission monitoring systems comply with each applicable monitoring system requirement, as listed in 40 CFR 60.13, 60.19, the applicable subpart of 40 CFR 60 as incorporated by reference in Section 7 of this permit; 40 CFR 60, Appendix F, *Quality Assurance Procedures*; and the *EPA Quality Assurance Handbook For Air Pollution Measurements*, EPA/600 R-94/038b, effective July 1, 1997. Attach to the Facility Operating Report required in Section 10 of the Operating Permit 110TVP01, a copy of each continuous emission monitoring system data assessment report for Quality Assurance Procedures conducted in accordance with 40 CFR 60, Appendix F and the approved continuous emissions monitoring system plan approved by the department.

[18 AAC 50.320(a)(2)(A-E), 1/18/97]

Condition 21. The permittee may request approval of an alternative test plan for Source ID 1 in accordance with 40 CFR 60, Appendix B Performance Specification 2, Section 16.0 *Alternative Procedures*, to define the frequency of testing for calibration drift and relative accuracy for times when Source ID 1 is out of service. As approved, Source ID 1 is a limited use peaking unit, turbine generator. GVEA does not have to do conduct daily CEM calibration drift tests and relative accuracy tests when Source ID 1 is not in operation. If Source ID 1 is in operation at any time during the calendar quarter, the permittee shall resume daily CEM calibration drift tests and perform a relative accuracy test on the CEM prior to unit operations. Ensure that all components of the CEMS on Source ID 1 are functioning properly before proceeding to the alternative calibration drift and relative accuracy testing procedure. Submit an alternative test plan procedure to the department 60 days prior to startup of Source ID 5 and prior to commissioning of the CEMS on Source ID 1. Included with the alternative test plan procedure detailed quality control and quality assurance procedures for emissions measurement on Source ID 1 when in service. Include the necessary actions to ensure a reliable startup of the emissions measurement systems when Source ID 1 is re-commissioned.

[18 AAC 50.320(a)(2)(A-E), 1/18/97]

Section 10. General Recordkeeping, Reporting, and Compliance Certification Requirements

Condition 22. **NSPS and NESHAP Reports.** The permittee shall submit to the department copies of reports required by Section 6 of this permit as they apply to the facility as follows:

22.1 Attach a copy of each NSPS report submitted to the U.S. Environmental Protection Agency (EPA) Region 10 to the Operating Report required by Section 10 of the Operating Permit 110TVP01.

22.2 Notify the department of any EPA granted waivers of NSPS emission standards, recordkeeping, monitoring, performance testing, or reporting requirements within 30 days after receipt.

[18 AAC 50.040, 1/18/97]
[Federal Citation 40 CFR 60 & 40 CFR 61, 7/1/97]

Section 11. Standard Conditions Not Otherwise Included in the Permit

Condition 23. The permittee must comply with Condition 38 through 40 , Section 10, "*General Recordkeeping, Reporting, and Compliance Certification requirements"* and Condition 41 through 47 found in Section 11 *"Standard Conditions Not Otherwise Included in the Permit"* of the Operating Permit No. 110TVP01.

Section 12. Permit Documentation

May 8, 1995	Air Quality Construction Permit No. 9531-AA003 issued to North Pole Power Plant (NPPP)
August 9, 2002	Golden Valley Electric Assoc. (GVEA) submits Air Quality Construction Permit Application for NPPP Combined-Cycle Project
August 14, 2002	ADEC application incompleteness email to Kate Lamal, Vice President Power Systems, Golden Valley Electric Assoc., Inc., request for additional information.
August 27, 2002	EPA completes their review of the GVEA North Pole Power Plant Title V Operating Permit 110TVP01.
August 28, 2002	GVEA response to ADEC August 14, 2002 request for additional information from Kate Lamal, Vice President Power Systems, Golden Valley Electric Assoc., Inc.
November 29,2002	GVEA submits to ADEC the Certification of the additional information supplied by GVEA for the NPPP Combined Cycle Project.
December 24, 2002	The preliminary Construction Permit and the revised Operating Permit were issued for Public Comment.
January 7, 2003	A Public Hearing was held at the North Pole City Council Chambers.
January 28, 2003	Williams Alaska Petroleum, Inc. comments on GVEA's preliminary Air Quality Construction Permit No.110 CP 01 and Air Quality Operating Permit No. 110 CP 01 Revision1.
January 31, 2003	GVEA comments on preliminary Air Quality Construction Permit No.110 CP 01 and Air Quality Operating Permit No. 110 TVP 01 Revision: 1.
April 25, 2003	GVEA submitted to ADEC the request to revise the preliminary Air Quality Permit No. 110 CP 01 and Air Quality Operating Permit No. 110 TVP 01 Revision: 1.